

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
20 January 2005 (20.01.2005)

PCT

(10) International Publication Number
WO 2005/005188 A1

(51) International Patent Classification⁷: B60K 6/04, B60L 11/18

(21) International Application Number: PCT/JP2004/008697

(22) International Filing Date: 15 June 2004 (15.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 2003-197195 15 July 2003 (15.07.2003) JP

(71) Applicant (for all designated States except US): TOYOTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HOSHIBA, Takeshi [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). NADA, Mitsuhiro [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP).

(74) Agent: ITEC INTERNATIONAL PATENT FIRM; Pola-Nagoya Bldg., 9-26, Sakae 2-chome, Naka-ku, Nagoya-shi, Aichi 4600008 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

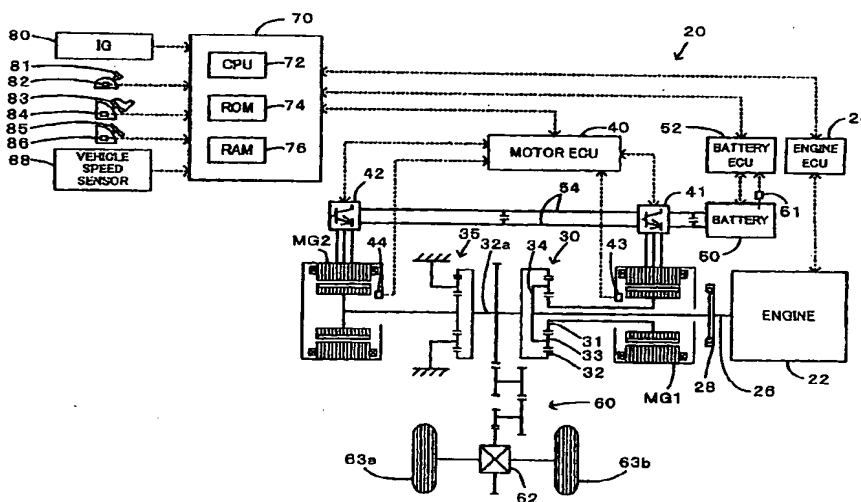
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: POWER OUTPUT APPARATUS, METHOD OF CONTROLLING THE SAME, AND AUTOMOBILE



(57) Abstract: The technique of the invention sets an upper limit torque T_{mlmax} and a lower limit torque T_{mlmin} output from a motor generator, based on input and output restrictions W_{in} and W_{out} of a battery, a motor electric power demand P_{m2} , an auxiliary machinery electric power demand P_{csm} , and a potential loss P_{loss} (step S150). The technique then restricts a target revolution speed N_{e*} of an engine to make an output torque of the motor generator within a range of the lower limit torque T_{mlmin} to the upper limit torque T_{mlmax} (steps S180 to S200). This arrangement ensures output of a torque in response to a driver's requirement, while effectively preventing the battery from being charged or discharged excessively.

WO 2005/005188 A1